Abstract of the Invention

A modular prosthetic assembly for use during performance of a shoulder replacement procedure on a patient includes a stem component configured to be implanted into a medullary canal of a humerus of the patient. The assembly also includes a prosthetic head component configured to be secured to a proximal end portion of the stem component. The prosthetic head component has a glenoid-bearing portion which is configured to bear against a glenoid surface of a scapula of the patient when the stem component is implanted into the medullary canal of the humerus of the patient and the prosthetic head component is secured to the stem component. The prosthetic head component also includes an acromion-bearing portion which is configured to bear against an acromion of the patient during abduction of the humerus when the stem component is implanted into the medullary canal of the humerus of the patient and the prosthetic head component is secured to the stem component. The glenoid-bearing portion and the acromion-bearing portion of the prosthetic head component define an outer bearing surface. The outer bearing surface extends in a medial/lateral direction across a radial distance D in which $D \geq 190°$. A method of performing a shoulder replacement procedure is also disclosed.